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Veterinary Medical Laboratory

Serves Iowa

Helps Make Iowa Safe Place To Raise Animals

Larry L. Herbold

ANOTHER step towards helping the Iowa veterinarian reach a definite diagnosis was accomplished with the opening of the new Iowa Veterinary Medical Diagnostic Laboratory at dedication ceremonies held July 17, 1956.

The facilities available now have grown with the progress and developments of Iowa State College and the Division of Veterinary Medicine since the first veterinary diagnostic service was available January 20, 1892. Floor plans and other details of the new laboratory can be referred to in the 1955 spring issue (17:3) of *The Iowa State College Veterinarian*.

The services offered by the new laboratory are gross pathology, bacteriology, microscopic pathology, serology, virology, clinical pathology, and chemistry. It can readily be seen that many of these examinations may be applied to a single specimen.

SERVICES

The post-mortem room, which can be observed through a glass-paneled wall, is the center of activity in the new diagnos-

tic laboratory. A complete necropsy is done on all specimens received. This consists of the examination of all organs for gross lesions and routine culturing of the heart, liver, spleen and kidney. Other organs are cultured if they appear to be septic or if directions are received to this effect.

Bacterial pathogens are sometimes isolated by the use of laboratory animals. They are then identified by the usual methods of morphology, biochemical reactions and serological tests.

Specimens to be examined for microscopic lesions are taken at the time of necropsy in the laboratory or are sent in by veterinarians from either a biopsy or post-mortem examination. The process of fixing tissues has been greatly speeded up by the addition of an autotechnicon. This machine automatically stains tissue sections after cutting with the microtome.

The cooperative (state and federal) brucellosis testing makes up the bulk of the work done in the field of serology. Samples of blood sent in for brucellosis testing may also be tested for the presence of leptospira antibodies if requested by the sender. In addition, the diagnostic laboratory has facilities to test for salmonellosis, Newcastle disease and chronic respiratory disease (CRD).

High on the list of important diseases diagnosed by the new laboratory is

Mr. Herbold is a junior in veterinary medicine at Iowa State. The author wishes to thank Dean I. A. Merchant, Dr. Paul Bennett, supervisor of the laboratory, Dr. Aaron Groth, other members of the laboratory staff, and Durwood Davis, VM 2, for their help in writing this article. Photos by Tobola.



Fig. 1. Dean I. A. Merchant and Dr. P. C. Bennett, supervisor of the diagnostic laboratory, stop for a moment in front of the main entrance to the new laboratory.

rabies. Negative findings are, of course, equally as important as positive findings, and extreme care is taken to reach the correct diagnosis. The presence of Negri bodies constitutes a positive diagnosis, but in their absence, the mouse inoculation test is relied upon. Psittacosis and ornithosis are other diseases commonly diagnosed by the injection of the suspected virus into mice. Other poultry viruses are usually identified by inoculation of



Fig. 2. Dr. Aaron H. Groth Jr. (left) and Dr. Frank Mitchell perform necropsies on two pigs in the new postmortem laboratory.

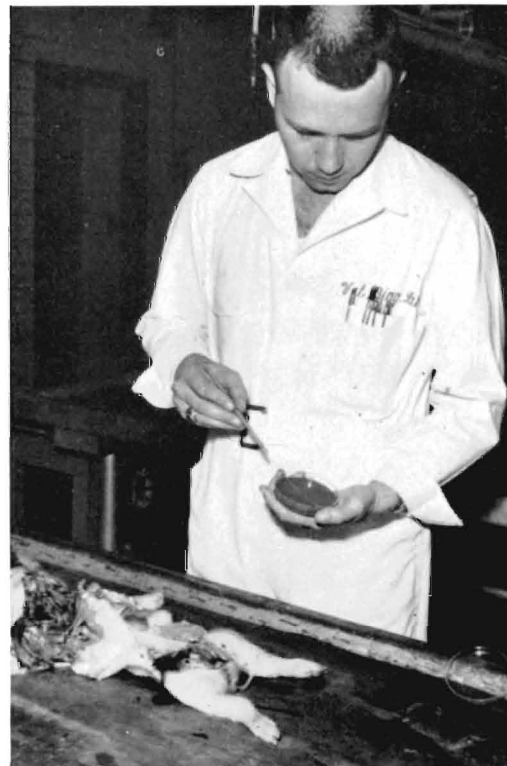


Fig. 3. Dr. Groth cultures the heart, liver, spleen, and kidney of a freshly necropsied pig.



Fig. 4. Mr. Donald T. Mason, technician, cuts the tissue with the microtome and places it on slides in preparation for microscopic examination.

chick embryos. Rabbits are injected to determine the presence or absence of the pseudorabies virus. These are examples of work done in the field of virology.

Clinical pathology involves the examination of blood smears and fecal samples. Anemia and parasitism are only two of the many conditions that may be determined by this section of the laboratory.

Stomach contents are examined but a complete case history is very important. Alkaloids and heavy metals are the only poisons that can be identified, but others can sometimes be ruled out if it is known what poison is suspected.

SUBMITTING SPECIMENS

When submitting an animal for diagnosis it is best to send a live or recently dead specimen infected with the disease. It is also best to submit two or three animals, when possible. Individual organs or organ systems may be sent to the laboratory for examination. These should be packed in a water-tight container, such as a can or plastic bag, and surrounded by ice in another water-tight container. If the tissue is cooled before sending, it

will be preserved longer. If microscopic sections are to be made of the tissue precaution should be taken to avoid freezing. Dry ice is likely to cause freezing and therefore should not be used. Heads of suspected rabid dogs should be packed in ice as above and marked "rabies suspect".

Specimens submitted for microscopic examination should be a representative portion of the lesion and should be placed in a 10 per cent solution of formalin. Tissue portions sent in this manner should be thin enough to allow the formaline to completely penetrate it from the cut edges. About one-half inch thickness seems to be satisfactory for this purpose. Alcohol should not be used as a preservative since the tissue will not stain properly. It is most desirable to place the tissue in a wide mouth jar, because the tissue hardens and sometimes cannot be removed from a small mouth container.



Fig. 5. Dr. E. A. Carbrey, supervisor of the co-operative (state and federal) brucellosis testing laboratory, works with three technicians in the rapid-plate test for brucella antibodies.

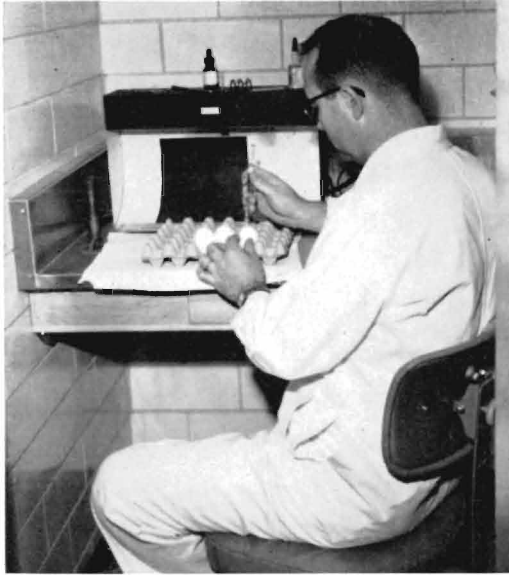


Fig. 6. Dr. Vaughn A. Seaton inoculates egg embryos in the examination of a culture for the presence of a virus.

Fecal samples should be packed in ice similar to the method described above.

It is important to obtain blood for blood smears from a live animal. Place a drop of blood on a glass slide and spread it very thin. The slides should be packed carefully to prevent breakage and sticking together.

Of course a complete history of the case and directions for examination should be included with all specimens. If owners are sent in with an animal or specimen adequate history should be sent with him. Frequently the owner does not recognize significant history. The laboratory follows the policy of reporting the results of examinations to the veterinarian and not to the owner.

With the addition of these modern facilities of the new Veterinary Medical Diagnostic Laboratory, Iowa State College and the Iowa State Department of Agriculture have taken another large step towards making Iowa the safest place in the world to raise livestock.

Dogs cannot talk, at least not by use of words. They talk principally by their expression.

CONTRIBUTION TO THE EPIZOOTOLOGY OF LISTERIOSIS.

Artificial infection with *Listeria* of one cow, one sheep, several chickens and mice, and spontaneous listeriosis in one cattle herd and one sheep flock are described. *Listeria* were found in the milk, lochial secretions, fecal material and in the nose-throat secretions. Listeriosis is highly contagious in chickens. The majority of contact infections are without symptoms so that latent infections outnumber the clinical cases. The infection per os rarely remains except in case of pregnancy. Direct infections and infections through dust are of importance. *Listeria* remain in the gravid uterus or the udder during lactation. Discharge through milk occurs in ewes during the entire course of lactation; this may also be possible in cows (chronic bacteria carriers). No agglutination titer develops in the blood unless a septicemia occurs. Pasteurized milk and chicken eggs are hardly sources of infection for humans. The agglutination reaction is uncertain.

Dedie, K. Contribution to the epizootology of listeriosis. Arch. Exp. Veterinaarmed. 9:251-264. 1955.

The U. S. Department of Agriculture and several state colleges have been testing insecticides given orally to control cattle grubs and believe they have one to be quite successful. Giving about 1.6 ounces to a 1000-pound animal, the insecticide killed grubs before they broke through the cow's hide, and yet had no ill effects on the animal. One dosage was given 2 to 5 months before the insects normally break through. This not only killed nearly 100 percent of the grubs, but also controlled lice and biting flies for several days.

Eighty percent of the cases of rabies reported in United States for 1956 occurred in dogs and wild life. Twelve percent were in cattle and there were ten cases reported in humans.